

Thomas (A. R.)

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HISTORY OF ANATOMY.

INTRODUCTORY ADDRESS

Delivered at the Opening of the

45th Session

OF THE

Hahnemann Medical College

OF PHILADELPHIA.

BY

A. R. THOMAS, M. D., Professor of Anatomy.

OCTOBER, 3, 1892.

presented by the author



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GENTLEMEN OF THE CLASS OF 1892-93:

In the usual order of succession it becomes my pleasant duty to welcome you on behalf of my colleagues, to the opening of this the Forty-fifth Annual Session of the Hahnemann Medical College. Ten years ago, on the evening of October 2, 1882, I discharged the same duty, under circumstances and surroundings so different from these of to-day, that I cannot refrain from making some allusion to the same. Ten years ago we were still in the old building on Filbert street, on ground covered by the Reading Railroad Terminal Depot now in course of erection.



The old college building, which for nearly forty years had been the home of your Alma Mater, and from which had been sent forth nearly 1,700 graduates, was small, dilapidated, and in every way unfit for a modern medical college. Its lecture rooms were badly lighted and worse ventilated ; the seats were uncomfortable, the halls narrow and the stairs steep and winding. The laboratories were small, badly equipped and scarcely deserving the name. The hospital, in the rear, with but about twenty-five beds, was equally unfit for its purposes, and of but little credit to the college or the profession.

Such were the conditions when I appeared as introducerian before the class of 1882-3. To-day, how all is changed ! The hopes and anticipations of ten years ago are more than realized, and we find ourselves the possessors of buildings, the pride and admiration of the profession, and which, for convenience of location, for beauty of architectural design, for completeness of detail, and for adaptability to their several uses are unsurpassed by any in the country. Our laboratories provide for abundant work in all the practical branches, while our hospital, which during the past year handled over 15,000 patients, enables us to offer clinical facilities scarcely elsewhere to be found.

You are to be congratulated, gentlemen, heartily congratulated, that you are to enjoy advantages quite unknown to the students of but a few years ago, privileges, which once understood, should lead to their fullest appreciation.

In evidence of the progress made by our branch of the profession in the decade just closed, I may mention that, during this period the homeopathic medical colleges in this country have increased from eleven to seventeen. Ten years ago there were but seventeen general hospitals in the country, now there are forty. The State societies have increased from twenty-six to twenty-nine, medical clubs from six to twenty-one, and medical journals from seventeen to

twenty-nine. The ten years just closed have seen an increase of our college class from 148 in '82, to 247 in '92, an increase of 50 per cent. During the same period our hospital has made a still more wonderful advance. The published report for '82 shows 419 cases treated in the wards, and 7,259 in the out-patient department making a total of 7,678 cases, while during the past year 1,194 cases were treated in the wards and 14,271 in the out-patient department, making a total of 15,465, an increase of over 100 per cent., thus placing the hospital in the very front rank of the great hospitals of Philadelphia.

Again, gentlemen, the present occasion is one of added interest to myself, from its being the 38th anniversary of my first introductory lecture given to the class of the Penn Medical University, October, 1854, and the commencement of my career as a teacher of anatomy. What changes have these thirty-eight years brought forth! Then the faculty of this college presented the names of Williamson, Humphrey, Ward, Small, Semple, Beakley and W. A. Gardner. Of my associates in the Penn Medical University were Longshore, Schmoele, Morgan, Macomber and Seth Pancoast. In the Philadelphia and Pennsylvania Medical Colleges, which soon after consolidated and finally became extinct with the Penn Medical University during the war, were the names of Darrah, Wiltbank, Allen, Gilbert, Neill, Reese, Bryant, Thomas D. Mitchell, F. G. Smith, Gobrecht Biddle, and Stille. The faculty of the University of Pennsylvania included the names of Jackson, Hodge, Gibson, Wood, Carson, Rogers and Leidy, while in the Jefferson were Jos. Pancoast, Mutter, Meigs, J. K. Mitchell, Bache, Dunglison and Hewston; a body of men, who, with their predecessors, have given to Philadelphia the well-deserved distinction of being the Medical Athens of America, and whose fame is destined to reach far down into the coming future. Of this long list of names, with

the exception of Drs. Morgan and Stille, both of whom have retired from active service, to-day, not one survives, thus leaving myself the only living, acting, representative of the teaching body of 38 years ago.

Again, this day is one of peculiar interest to myself, marking as it does the 66th anniversary of an event which occurred on the third day of October, 1826, the return of which forcibly reminds me that I am rapidly approaching the three score years and ten assigned as the general average of the life of man, and that in the natural course of events I also, must soon step aside and make room for a successor. Whenever that time may come, be it sooner or later, I shall be consoled by a knowledge of the fact that, the great work for which my colleagues and myself have so long and so earnestly labored, has been successfully accomplished, and the Hahnemann College placed upon a permanent foundation, and brought to a stage of enduring prosperity.

It is my privilege, gentlemen, to direct the students of this college in the study of that all-important branch of the medical curriculum, human anatomy. Impressed as I am with the importance of this study, forming, as it does, the very foundation of the whole superstructure of medical science, I naturally feel a desire of so enlisting your attention and interest, that you may be led to lay this foundation broad and deep, by acquiring a thorough familiarity with this important subject. With this view I purpose devoting the hour at my disposal this evening to a history of the evolution of the science of anatomy, with brief sketches of a few of the more distinguished discoverers and cultivators of this important field.

Enduringly interwoven with anatomical nomenclature, we find such classical names as Herophilus, Galen, Eustachius, Fallopius, Vesalius, Vidius, Sylvius, and of more modern times, those of Monroe, Hunter and Bell, with

many others. Every student of anatomy in noticing these names must have felt a desire to inquire in what age they lived, and to learn something of their lives and their anatomical work. As we shall find, each has performed some important service in the development of the science, and each is deservedly entitled to the memory which the use of his name secures.

The present state of the science of anatomy, like that of most others, has been reached by a slow process of growth, extending through many centuries. The earliest acquisition of knowledge upon this subject may probably be traced to the custom of offering sacrifices of animals by the ancients, and from the process of embalming as practised by the Egyptian priests. It was not, however, until the time of Hippocrates, 460 B. C., that we find evidence of any positive knowledge on this subject. Of the several works ascribed to Hippocrates none are devoted exclusively to anatomy, yet, from references in his treatises on physiology, surgery and practice, it is evident that he possessed some knowledge of the muscles, of the soft parts generally, and of the internal organs, although this knowledge was sometimes vague or even erroneous. He knew nothing of the distinction between veins and arteries. He appears to have been ignorant of the nature of the nervous trunks, and described them rather as tendons of muscles. He describes the brain as a gland, secreting a viscid fluid ; the ventricles of the heart as the fountain of life and the auricles as containing air. From this period until the time of Aristotle, who was born 384 B. C., anatomy made but little advance. By the latter, anatomy was first cultivated in a systematic manner and with a definite purpose. He was the first to make any study of comparative anatomy, in fact his knowledge of the human body was mainly derived from the examination of those of the lower animals. Following Aristotle came Diocles and Prax-

gorus about, 354 B. C. The latter first distinguished arteries from veins, and originated the idea that the former contained air, and hence gave them the name of arteries or air vessels.

Up to this period, as far as is known, no systematic dissection of human bodies had ever been made. About 320 B. C., under the patronage of the Egyptian Government, Erasistratus and Herophilus, physicians of Alexandria, it is claimed, made the first human dissection. As the works of neither have been preserved, we only know of their researches by occasional quotation by Galen and a few later writers. From these it would appear that they recognized the value of the heart, that they examined the brain and acquired some idea of its divisions and cavities, and formed a distinct idea of nerves which they divided into those of motion and sensation. They also gave the name of duodenum to the first portion of the intestines below the stomach.

The works of Celsus, who was born but 33 years B. C., manifest a considerable advance in the knowledge of anatomy. He was well acquainted with the heart, lungs and windpipe, as well as with the diaphragm and abdominal organs.

Of all the authors of antiquity none can so justly be considered as an anatomist as Claudius Galen, who was born in Pergamus, Italy, about the year 130 of the Christian era. At the age of eighteen, and mainly through the influence of a dream by his father, Galen commenced the study of medicine at Smyrna, after having enjoyed the advantages of the best schools and teachers of his age. He afterward spent several years in Alexandria, then the most noted seat of learning in the world. He returned finally to Pergamus to practice his profession, later settling in Rome, where he was made physician to the Emperor Commodus.

The Osteology of Galen is acknowledged the best of his or all earlier times. He carefully described the bones of the head and face, and divided the vertebrae into cervical, dorsal and lumbar. He first described the six muscles of the eyeball and the platysma myoides and gave names to most of the muscles as retained to the present time. He disproved the claim of the earlier anatomists that the arteries contained air, yet he was totally ignorant of the circulation of the blood. His description of the nervous system and of the thoracic and abdominal viscera is far in advance of any of his predecessors.

Galen had few opportunities for human dissection and the most of his observations were made from the examination of the lower animals. The death of Galen, which is supposed to have taken place about 210, was followed by an almost complete arrest of anatomical study for many centuries. Finally in the 14th century a renewed interest was excited in anatomy by the dissection of two human bodies, in 1315, by Mondino of the Medical School of Bologna, Italy. While the descriptions of Mondino were, in many cases vague or erroneous, yet his anatomy of the heart was wonderfully accurate, and he was evidently upon the verge of the discovery of the circulation of the blood. Still he repeats the old theory that the left ventricle contains gas or air generated from the blood. The pulmonary vessels he describes with tolerable accuracy.

Anatomy from this period was cultivated with renewed interest, and Italy long retained the distinction of giving birth to the first eminent anatomists of Europe. The glory which she acquired from the original researches of Mondino and his immediate successors was rendered still more conspicuous by the brilliant labors of Vesalius, Fallopius and Eustachius—men whose names have stood as conspicuous landmarks through the intervening cen-

turies, as they will continue to do through all coming time.

Andrew Vesalius, who has been denominated the father of modern anatomy, and who acquired his fame largely as Professor of Anatomy in the schools of Italy, was of Flemish origin, having been born in the city of Brussels in 1514. At the age of fourteen he commenced the study of anatomy in Paris under Jacques Dubois, who succeeded Vidius as Professor of Anatomy in the Royal College of Surgeons. Dubois was a man of great coarseness of manner and language, a blind follower of Galen, whose anatomy he simply interpreted instead of teaching by direct anatomical demonstration. It is said that a human body or skeleton was never seen in his anatomical theatre, the bodies of dogs and other animals offering the only material for the demonstrations, and so difficult was it to secure human bones that, had not Vesalius and his fellow-students obtained them from the cemeteries, they would have labored under the greatest difficulty in acquiring the rudiments of their anatomical knowledge. Realizing the unsatisfactory methods of teaching in France, Vesalius was led to look to Italy as offering more suitable facilities for the pursuit of his studies. Here his work was pursued with such zeal that, before he had reached his 22nd year, he was called to serve as Professor of Anatomy in the University of Padua. After remaining here for several years he was called to Pisa and shortly after to Bologna, and it appears that he carried on courses of lectures in these three cities during the same winter.

Vesalius was the author of the first comprehensive and systematic treatise on human anatomy. All previous works consisted of a medley of crude and frequently erroneous descriptions, combined with vague or fanciful physiological deductions. From his boldness in exposing the errors of Galen and from the accuracy of his knowl-

edge as acquired by careful dissections, Vesalius produced a work which has received the boundless admiration of his biographers. We are told that he commenced to arrange the accumulated material for this work at the age of twenty-five and accomplished his task before he had completed his twenty-eighth year. Not only was this the first systematic treatise on anatomy, but it was the first to present adequate illustrations. His large folio plates were marvels of careful drawing and engraving and constitute to-day the richest treasures of such medical libraries as may have the good fortune to possess copies. While the publication of this work gave Vesalius immediate distinction and popularity yet, at the same time, it led him into bitter contentions with the disciples of Galen. Galen was the infallible oracle on all matters relating to anatomy and medicine and to question or doubt any statement of his, was deemed by his blind followers as almost sacreligious folly. The zeal of Vesalius in the pursuit of anatomical knowledge knew no bounds and could be deterred by no obstacles. From the prejudice of the populace against dissections, his material was procured with great difficulty and his dissections were made with the utmost secrecy. It is related that, on one occasion, a criminal having been executed and his body left hanging in the chains of the gibbet outside the city of Padua, Vesalius planned for procuring the same for anatomical study. The following night which proved dark and cloudy, with two students as assistants, he succeeded in lowering the body from the chains. At that moment a fierce storm with thunder and lightning burst suddenly upon them. His frightened assistants fled, while Vesalius, undaunted, through the storm and alone, carried the body on his back safely into the city, to his anatomical room.

The ultimate fate of this distinguished anatomist was of the most pathetic character. Called to the court of Charles

V. of Spain he there acquired great popularity, and was consulted by all members of the court and nobility. On the occasion of inspecting the body of a Spanish Grandee with the consent of his kinsmen, it was observed that the heart, upon division by the knife, gave some feeble palpitation. Vesalius was immediately arrested and reported to the Inquisition, and it was only through the influence of the Emperor that he escaped more severe punishment than banishment to the Holy Land. He immediately started on his pilgrimage, but soon after reaching Jerusalem was invited by the Venetian Government to return and resume his professorship of anatomy at the medical school of Padua, which had been made vacant by the death of his former pupil and friend, Fallopius. In compliance with this request, he immediately started on his voyage of return by the Mediterranean. Meeting with a severe storm, he was finally shipwrecked on the island of Zante, where he died from hunger and exposure at the age of a little less than fifty years. Thus perished the justly styled "father of modern anatomy," sacrificed to the ignorance and prejudice of a superstitious age.

It is to be regretted that the name of Vesalius should not have been given a more prominent position in descriptive anatomy. While the names of his contemporaries and followers—Eustachius, Fallopius, Varolius and others—have been given to prominent organs and structures, a small foramen in the sphenoid bone, and that inconstant in its presence, is the only thing bearing the name of this illustrious man. But yet his name and history will be treasured with unabated interest as long as time shall last.

Eustachius, the friend of Vesalius, made many important discoveries, including the supra-renal capsules and the passage from the throat to the middle ear, named from him the Eustachian tube. Fallopius, his student and successor as professor of anatomy at Padua, made most careful dis-

sections of the internal ear, discovered the two fenestra of the vestibule, gave the first good account of the stylo-mastoid foramen, of the ethmoid bone and of the lachrymal passages. He studied carefully the organs of generation, discovering the tubes in the female leading from the ovaries to the uterine cavity, and which still bear his name.

Time will not permit us to dwell more fully upon the works of the anatomists of this period. Suffice it to say that the seventeenth century witnessed most of the great discoveries of anatomy and physiology of the past three hundred years. Harvey discovered the circulation of the blood in 1619. The lacteals were discovered by Ascelli, of Italy, in 1622. Pecquet, of Paris, discovered the receptaculum chyli, in 1648, and Bartholini, of Copenhagen, the lymphatics, in 1650.

Great impetus was given to the study of anatomy about this time by the employment of hard injections for the blood vessels, and the application of the microscope to the study of the tissues. Previous to this time milk, ink and various other colored fluids were employed for filling the vessels, but with very unsatisfactory results.

About 1668, De Graaf, of Holland, improved the syringe and Swammerdan and Ruysch first employed melted tallow and wax in 1672, thus securing, when cool, a permanent distention of the vessels and enabling them to demonstrate vessels before unknown. They thus discovered the vasa vasorum, the bronchical arteries, and the vessels of the middle layer of the choroid and from Ruysch named the tunica Ruyschiana. About the same time Lowenhoeck, of Leyden, so improved the microscope as to make it available for the study of minute structures, thus opening a boundless field of exploration for the anatomist and physiologist.

Of all the discoveries of the seventeenth century that which gave the greatest lustre to the fortunate discoverer, and did more to advance the science of medicine in general, than all others, was that of the circulation of the blood, by William Harvey of London. Harvey was born in 1578. He studied anatomy under Fabricious in Padua, Italy, the pupil and successor of Fallopius. Returning to London he became physician to St. Bartholomew Hospital and Professor of Anatomy in the College of Physicians and Surgeons. He was physician to King James I, and later to Charles I. While in Padua he learned of the presence of the valves in the veins, these having been discovered by Fabricious. After his return to London, by a long series of experiments and careful observations, and by broad generalizations based upon the disjointed facts previously known, he finally, in 1619, caught the first glimpse of the discovery which was destined to render unmeasured advantages to the medical world and give immortality to himself.

While Harvey is clearly entitled to the honor of this great discovery, it is a fact, nevertheless, that every essential point in the anatomy of the vascular system was previously known. Thus Galen had proven that the arteries were blood vessels instead of air vessels. He knew also that the blood in the arteries was red, while that in the veins was blue. Michael Servitus, of Spain, a fellow-student of Vesalius in Paris, distinguished as a profound student not only in medicine but in law and divinity, was a writer upon each of these subjects and the first discoverer of the pulmonary circulation. Incurring the hatred of the church through his claimed heretical views on the subject of the Trinity, mainly through the influence of John Calvin, the Protestant reformer, he was brought before an ecclesiastical tribunal at Geneva, Switzerland, tried, convicted of the crime of heresy, and sentenced to be burned

at the stake with his hated books and manuscripts. On the 27th day of October, 1553, on a hill just outside of the city of Geneva, in the presence of a vast gathering of men, women and children, conspicuous among whom was John Calvin with many other prominent men of the Church, all assembled to witness a scene of the utmost horror—Servitus, chained to a stake, perished in the flames fed partly by his own books and papers. Fortunately a single volume escaping total destruction was snatched from the flames by some curious relic hunter, and is held to-day in one of the libraries of Paris, with one exception the only known copy in existence, severely scorched by fire, a precious memento of the greatest of men, and one of the most cruel events in the history of the Church. In that volume Servitus gives a clear and correct view of the pulmonary circulation, entitling him to a share in the honor of that great discovery.

Vesalius had also carefully and accurately described the heart with its several valves. He also corrected the error of Galen that openings existed in the ventricular septum, and apparently was upon the eve of the great discovery.

It may seem strange that with the pulmonary circulation well known, seventy-five years should have elapsed before the systemic circulation should have been recognized. But we are to remember that the anatomists of the time were thoroughly imbued with the idea that the lungs were the propelling organs of the blood, that they knew nothing of the capillary vessels which connect the arteries with the veins, and were ignorant of the use of the valves in the veins, considering them simply as strengthening bands for the walls of the weak vessels. It remained therefore for the genius of Harvey to show the use and influence of the several known structures and to make a clear and satisfactory demonstration of the entire circulation.

Still the medical world was not ready to accept the new doctrine, and for twenty years it was bitterly opposed in Italy, France and Germany, and by a few even in Great Britain. Some, while disposed to accept the doctrine as true, yet envious of the reputation that Harvey was likely to acquire, assumed that there was nothing whatever new in the claimed discovery and that Harvey had stolen the whole idea from earlier writers. To such an extent was this prejudice carried that his business was materially injured, his standing and influence seriously damaged and even his sanity questioned. Still he had his friends and supporters, and as truth is always mighty and sure ultimately to prevail, so justice finally came to Harvey.

Previous to the eighteenth century anatomy had received but little attention in English speaking countries. As early, however, as 1505 King James of Scotland ratified a charter, giving annually to the surgeons a single body of an executed criminal for dissection. In 1694, nearly two hundred years later, this grant was so extended as to include the bodies of all executed criminals in Scotland. With this increase of material an Anatomical school was organized in Edinburgh in 1697, and for many years that city held the distinction of offering the best opportunities for the study of anatomy outside of the continent of Europe. The terms of the charter conferring this privilege required that all dissections should be made in the winter only, that the intestines should be buried within twenty-four hours and that the dissection be completed and the body buried within ten days. Think of it ! A full course of anatomical lectures and demonstrations completed in ten days ! An interesting minute found in the records of the Society of Surgeons tells us that the first day was devoted to a general discourse on anatomy with a demonstration of the integument and the muscles of the abdomen. On the second and third days the abdominal

organs were demonstrated. The fourth day was devoted to the organs of generation and a discourse on hernia ; the fifth to the thoracic organs with the circulation and the respiration ; the sixth to the brain with its membranes and the cranial nerves ; the seventh to the organs of sense ; the eighth to the muscles of the neck, chest and arms ; the ninth to the muscles of the back and legs, and the tenth to a general review of the whole subject.

In 1705 this school was united to the University of Edinburgh and Robert Elliott appointed its first Professor of Anatomy, at a salary of £15 or \$75 a year. In 1720 Alexander Monroe was appointed to the chair, and mainly through his influence a full medical faculty was organized, anatomy with surgery having been the only branches previously taught.

Alexander Monroe, usually known as Monroe Primus, was the first in the line of a most remarkable succession of father, son and grandson, by which the chair of anatomy in the University was held for a period of 126 years. Monroe Primus holding the position from 1720 to 1758, a period of 38 years, Monroe Secundus from 1758 to 1808, 50 years, and Monroe Tertius from 1808 to 1846, 38 years.

The three Monroes were men of ability, earnest students of anatomy, and made many original observations and published a number of works on anatomy, physiology and surgery.

Following the Monroes came the two Bells, John and Sir Charles. Both were eminent as teachers, and the latter, from whom the external respiratory nerve has been named, made many original observations particularly on the nervous system. At the age of thirty he moved to London where he acquired great reputation as a teacher of anatomy and surgery. Sir Charles was an artist also of great ability and his skill both in sketching and coloring

has probably never been equalled in the medical profession. The illustrations in his anatomy of expression, drawn by his own hand, are marvels of truthful representations of nature.

The brothers Hunter, William and John, were also born in Scotland in 1718 and 1728 respectively. They early settled in London where they acquired influence, fame and wealth. Both were popular teachers of anatomy. William made important discoveries particularly relating to the lymphatic system, for which also claims were made by the second Monroe. In 1775 he published the anatomy of the Gravid Uterus, a work upon which he had been engaged for twenty-four years and the illustrations of which were made from dissections by his own hand. He formed a most valuable museum of anatomical preparations, which may be seen to-day in the University of Glasgow, his native city, to which it was bequeathed.

John Hunter, the younger brother, commenced his career by engaging as an apprentice with a cabinet-maker. Dissatisfied with this employment, and learning of the success of William as a teacher of anatomy, in London, he followed him to that city in 1748, when in his twentieth year, and immediately entered the private anatomical school of his brother. He at once commenced to dissect and soon manifested remarkable facility in the handling of the scalpel. His skill was soon put to the test by his being called upon to prepare a dissection of the muscles of the arm for his brother's lecture. William was so pleased with this effort that he soon after entrusted him with the preparation of a similar part in which the blood vessels were injected. In this he again succeeded so well as to have received much credit, and from this time his progress was so rapid that the following season he was able to take the position of demonstrator in his brother's school.

While John Hunter was denied the educational advan-

tages of his brother William, the latter having had a thorough classical course in Edinburg, still, his natural ability enabled him to soon rival him in every department of scientific attainments. His thirst for knowledge led him to cultivate every science. His industry was indefatigable. In addition to attending to his large private practice and his duties at St. George Hospital, for many years, he spent three or four hours every day in his private dissecting room adjoining his house, where he dissected besides many human bodies over five hundred species of animals. He built up a museum of human and comparative anatomy of great size and value, and for which, after his death, the government paid \$75,000, placing it in charge of the College of Physicians where it still remains. In short, in his combined character of Anatomist, Physiologist, Surgeon, Pathologist and Naturalist, the genius of John Hunter enabled him to acquire the greatest fame of any man in the whole annals of medicine and to have secured him, after his death, which occurred in October, 1793, at the age of sixty-five, a resting place in Westminster Abbey with the kings, nobility, and greatest men of England.

We have seen, that, in the early days of anatomical schools, the only legal source of supply of material for dissection was from the bodies of executed criminals. With an absurd inconsistency, governments, while exacting of medical students knowledge and skill which could only be acquired by dissection, at the same time, made the procuring of material in any irregular manner punishable by fine and imprisonment. About 1825 dissection was made obligatory upon all medical students. Previous to that time, dissection being optional, simply from a lack of opportunity many students were never seen in the dissecting room. Immediately upon the passage of this rule the increased demand produced an immediate increase of pro-

fessional body-snatchers and robbers of grave yards. In Edinburgh, where there were at that time nearly one thousand students, the great demand gave rise to a series of crimes of the most appalling character. On the 29th November, 1827, an old man died, in the purlieus of Edinburgh. He lodged with an Irishman named William Hare, to whom he owed sixteen dollars. Hare saw but one way to reimburse himself, and that was to dispose of the old man's body to the doctors. He found a ready accomplice in one William Burke, also one of his lodgers. The body was clandestinely removed from the coffin and a bag of tan bark substituted. The lid was screwed down and the funeral passed off as usual. The same evening the body was disposed of for thirty-five dollars. Encouraged by this successful stroke of business, Hare suggested that they entice the old and infirm into their quarters and "do them up" for the doctors. The proposition was accepted, and Hare started out in search of a victim. He found an old woman, half drunk, and, under some pretence, induced her to enter his house. He gave her whisky until comatose, when, with Burke's assistance she was strangled to death. The body brought fifty dollars. Emboldened by their success and with their appetites sharply whetted, they now engaged systematically in the work of murder. Vagrants, street walkers and imbeciles were enticed into the house of Hare, made dead drunk, and suffocated. They even pursued their murderous work in daylight. Finally a woman who had been stifled and her body but partially hidden under some straw, was seen by two of his lodgers who notified the police. Thus, in eleven months thirteen victims had been secured and their bodies sold. Both men were arrested and tried, when Hare, the blackest of the villains, escaped by turning states evidence, while Burke was convicted, hanged and his body dissected.

Still the work of the resurrectionists continued, the demand was great and urgent and the supply was sure to come. The laws against the crime and the vigilance of the police had but one effect—not to stop the trade, but to increase the cost. The usual price was from thirty-five to fifty dollars a piece. In 1826 the price was as high as eighty dollars to one hundred dollars and in some instances one hundred and fifty dollars were paid for a single subject. The skill of the resurrectionist was such that no obstacle was insuperable. If the police watched the ground they were either bribed or made drunk: if relations replaced them, a half hour's unwary slumber by the weary watchers was quite sufficient for the adept; if high walls were built, these were scaled. Such adepts were they that Sir Astley Cooper, in his evidence before the Parliamentary Committee, declared that, no matter what the social position of any person in England, he could obtain his body, if he desired it, and such villains were they that, for a price they would make a subject of *him* their best, though unwilling patron.

In 1783 when O'Brien, the Irish giant (whose skeleton, eight feet four inches high, may now be seen in the Hunterian Museum of the College of Surgeons, London) was in failing health, John Hunter, anxious to secure his skeleton, sent his servant to watch the disposition of his remains. Suspicion of the wish of the doctors had been excited in the mind of the patient, and in his horrors of the dissector's scalpel he ordered that, after death, his body should be watched day and night, till a leaden coffin could be made, in which he should be taken to the sea and there buried. Soon after, he died, and the watchers furnished by the undertaker carefully entered upon their duties. It being discovered that the watchers were in the habit of refreshing themselves at a certain tavern, in the intervals of duty, they were there approached and a bargain soon

struck, to the effect that, if the watchers would agree to it, the body should be stolen at night and for their consent they were to receive two hundred and fifty dollars. The others, satisfied with all but the price, demanded five hundred dollars which Hunter agreed to pay: Finding him so eager they again and again raised the price until they demanded two thousand five hundred dollars. To this Hunter finally agreed, the body was stolen, conveyed to Hunter's dissecting room and the skeleton immediately prepared.

In those times the bodies were generally left at the dissecting rooms at night in bags, and this gave an opportunity for a practical joke too good to be lost. On one occasion two bodies were thus brought to John Hunter's room, delivered and paid for on the spot. The men had gone but a few steps when the trick was discovered. They were pursued and the principal collared. "Here," he was charged, "you have left me a live man." "I know it," said the man, breaking away with the money, "You can kill him when you want him."

Repeated efforts failed to secure a more liberal supply by legal enactment, until finally, in 1832, Parliament passed an anatomical act, granting the colleges the bodies of all persons, unclaimed by friends and to be buried at public expense. The work of the resurrectionist was at an end.

In our own country the law was more tardy in supplying the medical schools, and while no such crimes were ever committed here, where the demand for bodies never approached that of London and Edinburgh, yet the supply of necessity came largely through the illegal robbing of graves. In the large cities, the almshouses, prisons and hospitals furnished a fair supply and, although their use for this purpose was in violation of law, yet the authorities obligingly closed their eyes and the schools were seldom disturbed. With schools in the inland towns and cities

the rifled graves were almost the only source of supply, and the newspapers were frequently reporting cases of arrest for that offence, and even of the mobbing of medical schools. Finally, about 1880, the Legislature of Pennsylvania passed an act, since adopted in many of the States of the Union, modeled upon that of Great Britain, giving the bodies of all persons unclaimed by friends, and to be buried at public expense, to the medical schools. The supply is now abundant and furnished at actual cost of transportation and preservation.

In listening to the recital of the progress of human anatomy, you may feel impressed with something of the views of a writer in the early part of the century, who says, "The discoveries of the men of an earlier age have been already made, and we can no longer pick up, as they did, the magnificent gems of the sciences as they open their rich and novel stores to the student of nature. Anyone might then have made an unperishable name, for novelties started into sight almost at every step, and the enquirer after truth was overwhelmed with great opportunities and mighty thoughts!" These words were written about sixty years ago, but how completely have the intervening years dispelled the writer's narrow views. Never in the history of medicine have so many important discoveries in anatomy and physiology, so many improvements in surgery, so great an advance in pathology and the practice of medicine and especially in general science, been made in the same period of time as during the past half-century ; and for *you* there are fields for exploration, as rich in possibilities and as capable of bringing you honor and fame as any in the past, and it is as true to-day as in the time of Newton, " that a great ocean of truth still lies undiscovered before us."

You have chosen, gentlemen, a profession, the acquirement of which necessitates long and patient study. Its prac-

tice involves the responsibility of human life and health in all their wide and varied relations. You will be called upon to decide questions relating not only to the welfare of the individual, but to that of families and whole communities as well, questions necessitating the exercise, on your part, of the greatest wisdom, the soundest judgment and the keenest appreciation of human nature. In preparing yourselves for assuming these weighty responsibilities, you will need to avail yourselves of every advantage, apply yourselves with unremitting assiduity, economize every moment of time, and never lose sight of the fact that you are approaching an ordeal upon the successful passage of which is depending your whole future career.

Gentlemen, I should fail in the discharge of my full duty were I to neglect to sound a note of warning against the many temptations which you may meet, calculated to lead the unwary from the paths of strict rectitude. Some of you, no doubt, for the first time, find yourselves far from home, surrounded by numerous attractions, among which will be found the many gilded temptations which a great city offers to the young. May you be strengthened in your efforts to resist these by a remembrance of the parental solicitude which ever follows you. Betray not the confidence reposed in your integrity. Shun every allurement of vice as you would the poisonous blast from the deadly ipas, and by your faithful performance of every duty, by your devotion to your studies, and by your general correct deportment, justify your friends in the exercise of that pride with which they will greet your return to the domestic circle.

And now, before closing, I desire to refer to the efforts made by your Alma Mater, aided by the Young Men's Christian Association—an organization noted throughout our land for its interest in the welfare of young men—for the greater comfort and convenience of our class, and for

giving them some of the home-like surroundings which they might otherwise miss in their long absence from the paternal fireside. I allude to the rooms in the basement, handsomely furnished, mainly through the liberality of the association referred to, and where, as opportunity offers, students may retire for reading, writing or social intercourse, and thus pleasantly enjoy moments which could not otherwise be so agreeably employed.

Should this effort in your behalf be accepted in the spirit in which it has been made, we feel the fullest confidence that the same care and caution will be exercised in its enjoyment, as similar privileges would be treated by gentlemen at their own homes. We would have you remember, that the attractions of these rooms are not to entice you from the duties of the lecture rooms or laboratories, and that they are to be frequented only before, after, or during the intervals of lectures.

Welcome, gentlemen ! to all a most hearty welcome, both to these noble halls, to the many privileges and advantages which you will here enjoy, to the pure pleasures of scientific pursuits, and to the happiness attending the acquisition of that reward that awaits the earnest and faithful votary of our noble profession.



